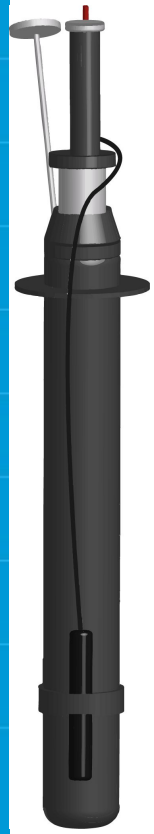
Global Ocean Monitoring and Observing
NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION



Argo

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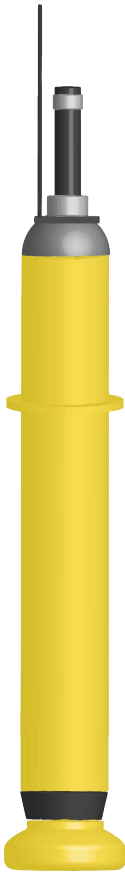
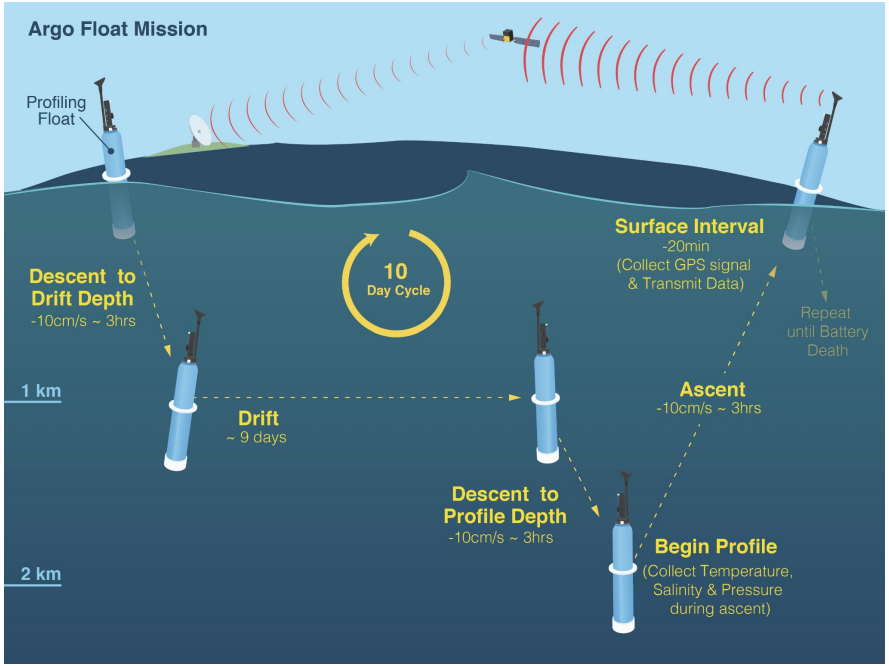


Argo: **a uniform global array of consistently missioned profiling floats**

- 10 day
- 1000 dbar parking depth
- 2000 dbar sampling depth for temperature and salinity
- Long-term and sustained



A compelling global design with broad utility for science and operational forecasting

How GOMO has supported Argo

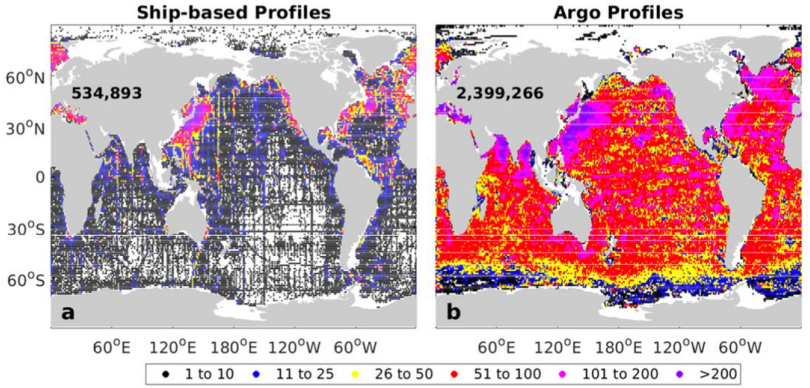
- US Argo would not exist without NOAA/GOMO's strong support.
- It has been the **primary funder** since 2001 **for Core** activities
- Supports **capacity building** for new **OneArgo missions** when the budget allows
- **Deep Argo** would not be so advanced without GOMO support
- Supports the **US Global Data Assembly Centre** (USGODAE)
- Supports the global **File Checker** run at the GDACs - ensure uniform parseable files
- **Full time** program manager (2001-present)
- Supports **strong US leadership of international Argo**: co-chairs of the Argo Steering Team and Argo Data Management Teams

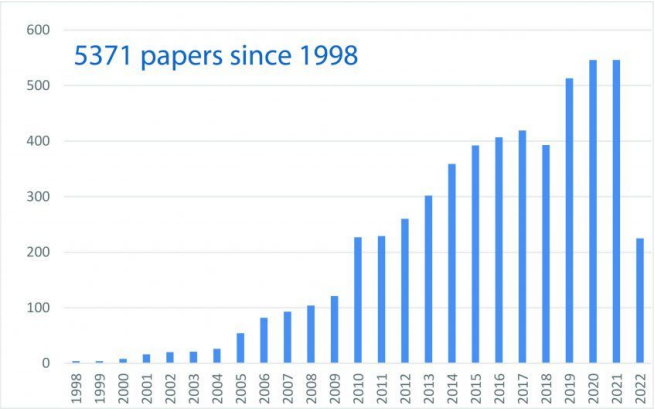
GOMO’s roles and scope of effort

- Program manager has an **active role** in international Steering Team and Data Management meetings (no other country has this)
- Program manager assist with maintaining and expanding **EEZ access** (for BGC variables) and manages notifications for the 2000 active US floats.
- First **Knauss Fellow** for Argo (2022)
- Consistently has Argo in **budgetary requests** for Congress
- Active role in **workshops and outreach/communication activities**
- Allows and encourages **technical development** - keeps US program at the forefront of float/sensor technology

Impacts

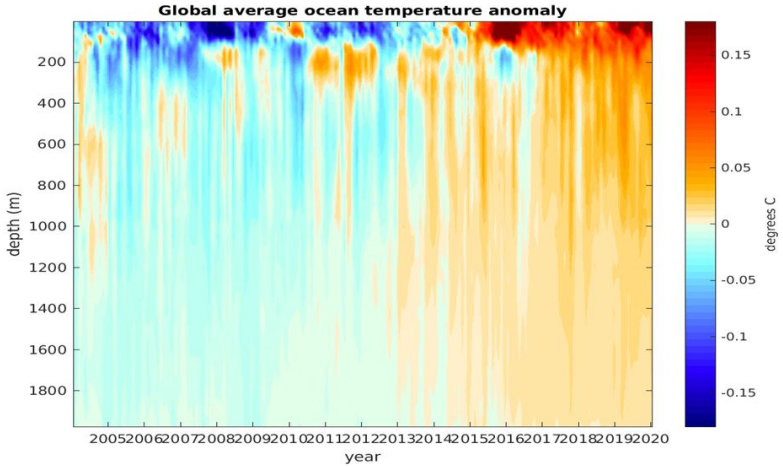
- Previous global ocean survey of 8000 profiles took **~10 years** and utilized most of the global class research vessel effort/ Argo delivers a global survey **every month** of 10,000 profiles
- The **winter oceans** have been characterized for the first time in many regions

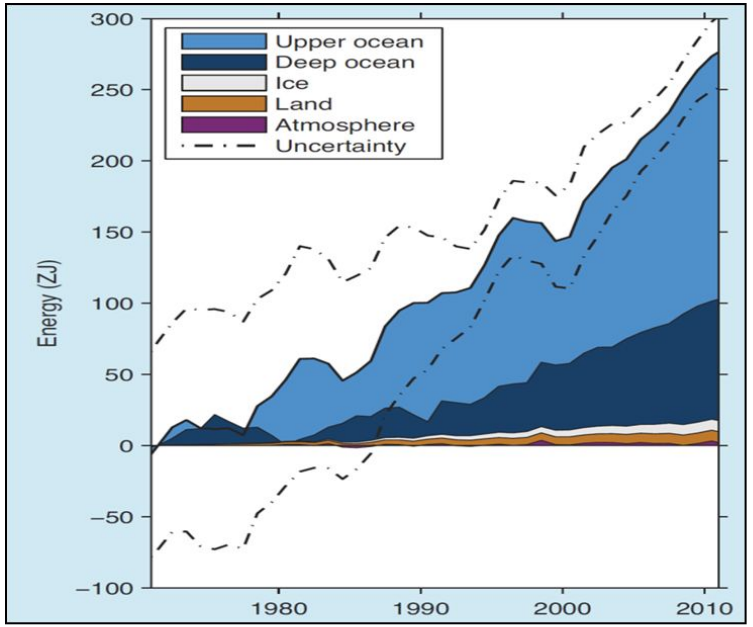




Argo has **revolutionized global ocean science:** more than one paper per day relies on our data

Impacts





Global ocean heat content (IPCC AR5)

Argo is the primary ocean dataset used to track **ocean** physical **change** and its role in **sea level rise** for climate assessments

Argo underpins global ocean **state estimates** and **prediction** systems models, seasonal **climate** forecasting systems (e.g. El Nino), and more recently is starting to support **hurricane** prediction systems.

Achievements

- Maintained **50% of the global Core array** despite flat funding and reduced deployment rates
- US float **lifetimes** continue to **improve**
- supported the development of **Deep Argo** and the deployment of the largest Deep Argo pilot arrays
- Built capacity in NOAA and other partner laboratories for the **BGC Mission**
- Supported the testing and piloting of a **second CTD** for Argo: RBRArgo CTD
- **Faster data delivery** to support storm forecasting
- IEEE **Innovation Award** 2022 (pictured above)
- Citable **data paper** for the first 2M profiles
- Development and publication of **a new global, full depth and multidisciplinary design: OneArgo**

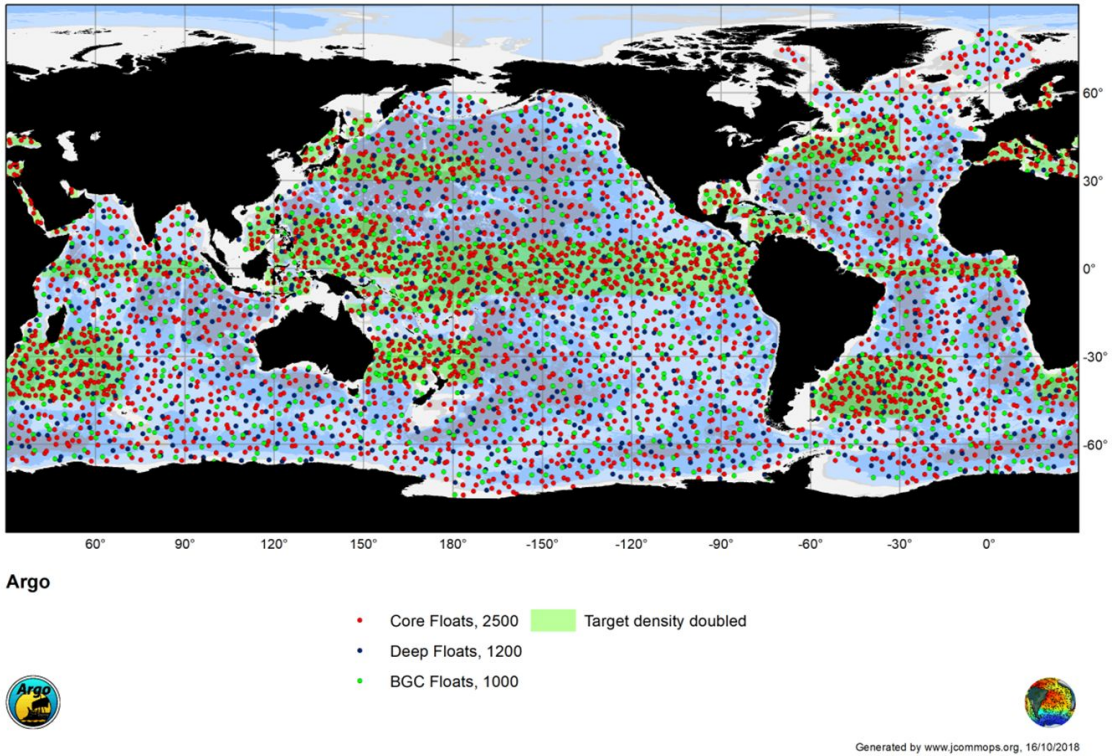
A vision for Argo beyond 2020

One array

Global in extent -

full depth -

multidisciplinary



Education and Outreach

SEREAD: regionally relevant ocean science curricula for Pacific Island schools using Argo data

- School visits and talks
- Over 150 PhD theses since 2017
- Numerous med

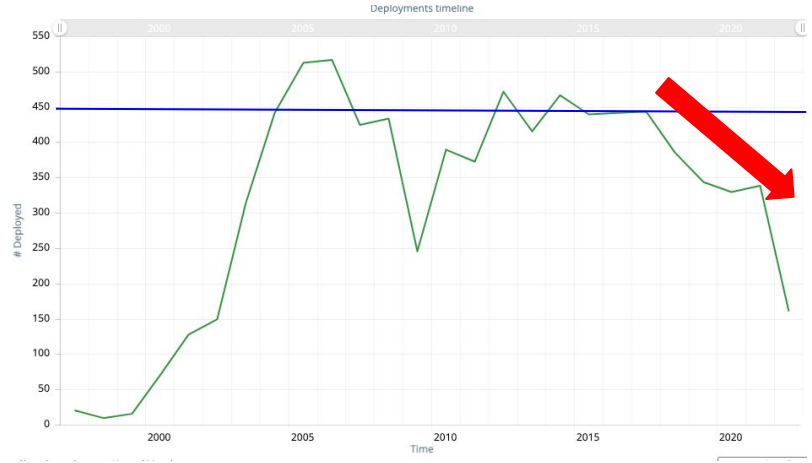
Adopt A Float

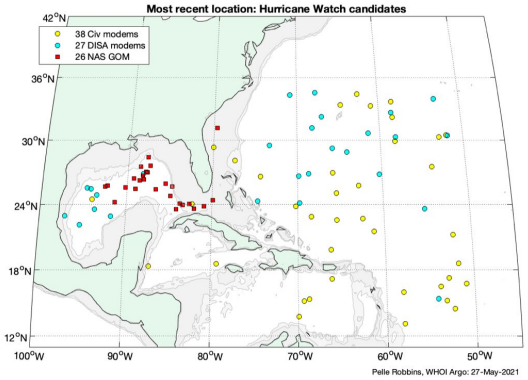
- New project coming! Based on a similar successful idea from the Southern Ocean Carbon and Climate Observations and Modeling (SOCCOM) project
- Beginning with AOML and PMEL labs

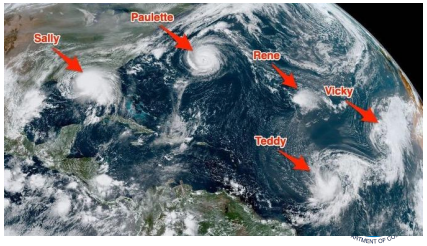
M. Scanderbeg shows off the demo deep Argo float and Lego Argo float models at the Birch Aquarium

Future plans and opportunities

- It is unlikely that increasing float lifetimes can continue to compensate for reduced deployment rates. Core Argo support needs a **re-baseline** else the global array will degrade
- Expand **core Argo** to the **OneArgo** array with support from national and international partners
- Aim to increase **tropical band** sampling as required by TPOS2020
- Build the **Southern Ocean** coverage in the sea ice zone as required by SOOS.
- Invest in pilots in the **Arctic** and for **hurricane prediction**







How Argo will advance the ocean observing enterprise

- Argo remains at the **forefront of** developments in **data management**, and global reach for subsurface observations.
- Argo data is FAIR, **democratizing** community access to **subsurface ocean data** without needing special equipment or research vessels
- Core Argo has and will continue to have **very strong synergies** with several **satellite missions**: surface topography, ocean salinity, sea surface temperature.
- If provided with the required resources, Argo will enhance **tropical ocean** sampling to enhance ENSO prediction and research, and fill major gaps in subsurface monitoring of the rapidly changing **polar oceans**
- OneArgo will revolutionize our understanding of the dynamics of the **deep ocean** and of the interactions between **physics,chemistry and plankton** in the global ocean. Realize synergies with **ocean colour satellites**
- Argo will continue to collaborate with suppliers **test, characterize and improve sensors** for subsurface ocean sampling such as CTDs, oxygen, pH, nitrate and optical sensors. This will benefit many other networks.
- The program will aim to continue to collaborate **with the reanalysis and forecast community** to continue to drive up the utility, use and impact of its data in their services and products.

Additional Slides